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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/537,883

06/07/2005

Michael Kaus

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PHILIPS INTELLECTUAL PROPERTY & STANDARDS

P.O. BOX 3001

BRIARCLIFF MANOR, NY 10510

EXAMINER

NGUYEN, PHU K

ART UNIT

PAPER NUMBER

2628

MAIL DATE

DELIVERY MODE

06/19/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/537,883	Applicant(s) KAUS ET AL.	
	Examiner Phu K. Nguyen	Art Unit 2628	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 March 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.


Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.


PHU K. NGUYEN
PRIMARY EXAMINER
GROUP 2300

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>2/1/07</u> . | 6) <input type="checkbox"/> Other: _____ |

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Prior Art (paragraph [0007]) in view of COHEN et al. (Finite Element Methods for Active Contour Models and Balloons for 2D and 3D images).

As per claim 1, the Prior Art in paragraph [0007] teaches "method of segmenting a three-dimensional structure from a three-dimensional, and in particular medical, data set while making allowance for user corrections, having the following steps: a) provision of a three-dimensional deformable model (M) whose surface is formed by a network of meshes that connect nodes at the surface of the model, b) positioning of the model (M) at a point in a three-dimensional data set at which the structure (6) to be segmented is situated, c) manual displacement of nodes" (paragraph [0007], method of the generic kind comprises, after automatic segmentation has taken place, deforming the matched-up model manually, e.g. by displacing a node. The automatic segmentation is then performed for a second time with this deformed model). The Prior Art mentions problematic about the Prior Art's method is that the step of the method in which the internal and external energies are minimized moves the nodes that have been displaced manually back to their original positions, because it is at these positions that the energy

of the deformable model is at a minimum). The Prior Art does not teach "re-calculation of the nodes of the model (M) in weighted consideration of the nodes that have been displaced manually". However, Cohen teaches that the re-calculation of the nodes in weighted consideration of the nodes is well known in the art (Cohen, section 4.4, Elasticity and Rigidity Coefficients; page 31). It would have been obvious in view of Cohen to modify the initial 3D deformable models in the Prior art because the weight consideration allows a flexible matching of the edge (Cohen, section 6, Conclusion, page 33).

RESPONSE TO APPLICANT'S ARGUMENT.

Applicant's argument filed on March 27, 2007 have been fully considered but they are not deemed to be persuasive.

Applicant argues the cited references do not teach the step of "re-calculation of the nodes of the model (M) in weighted consideration of the nodes that have been displaced manually" which is not correct. Applicant argues that the Prior Art in paragraph [0007] calculates the nodes to place them at the positions where these nodes satisfy the minimization of the internal and external energies, and one of these nodes is manually moved out of its "optimum" positions, then the minimizations of internal and external energies are no longer hold, so the manually moved node will move back to its original position. In Applicant's claims, there is no step after the re-calculation step when a node is moved, they only state that when a node is manually moved, the calculation is initiated. The Prior Art forces the moved node back because its new position is no longer in a place where the energies are minimized; in other

words, since the moved node is forced back to its original position, it seems that there is a recalculation step after a node is moved. The Cohen reference is used to show that when a mesh is formed, all its nodes are placed at positions to satisfy some constraints or conditions; therefore, when the nodes in the Prior Art are in a new positions, the system calculates their positions to decide whether they satisfy some constraints. Applicant only claims "recalculation step" but fails to claim what to do after the system get the result of the re-calculation step; therefore, the claimed invention does not patentable over the art of records.

Claim 2 adds into claim 1 "determination of a candidate point for each sub-surface defined by meshes of the model, each candidate point being situated on a normal to the sub-surface, assignment of a weighting factor to each node that has been displaced, the weighting factor being larger the smaller the distance between the displaced node and a boundary surface of the structure to be segmented, re-calculation of the nodes of the model while allowing for the candidate points determined, the displaced nodes, and the weighting factors assigned" (Cohen, section 2.2.4, A survey of attraction Potential used in Reconstruction Methods, paragraph of Mixed version, page 16).

Claim 3 adds into claim 1 "the nodes are re-calculated by minimizing a weighted sum of external energy, internal energy and an energy that takes into account the manually displaced nodes" (Cohen, section 2.2.4, A survey of attraction Potential used

in Reconstruction Methods, paragraph of Mixed version, page 16).

Claim 4 adds into claim 1 "a memory unit for storing a deformable model whose surface is formed by a network of meshes that connect the nodes at the surface of the model, and for storing a three-dimensional data set and in particular a medical data set, an image-reproduction unit for reproducing a structure to be segmented and the deformable model, a calculating unit for re-calculating the nodes of the model in weighted consideration of nodes which have been displaced manually, a positioning unit for positioning the model at the point in the three-dimensional data set at which the structure to be segmented is situated" (Prior Art paragraph [0001]; or Cohen's Sun Sparc station in section 5 of 3D Results, page 32). Claim 4 further claims the performances of steps in claim 1 which is rejected under the same reason.

Claim 5 claims a computer program to perform the steps of claim 1; therefore, it is rejected under the same reason.

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claim 5 is rejected under 35 U.S.C. 101 because the claimed invention is not supported by either a positively asserted utility or a well established utility.

The claimed "computer program" per se is not a process or practical application since it is not concretely written into a memory, nor run by a computer to form a process. In contrast, a claimed computer readable medium encoded with a computer program, executed by a computer, is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program functionality to be realized, and is thus statutory. See Lowry, 32 F.3d at 1583-84, 32 USPQ2d at 1035.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phu K. Nguyen whose telephone number is (571) 272 7645. The examiner can normally be reached on M-F 8:00-4:30.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Razavi can be reached on (571) 272 7664. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Phu K. Nguyen
June 3, 2007


PHU K. NGUYEN
PRIMARY EXAMINER
GROUP 2300